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DISCLOSURE TEXT:

2p. This system is designed to greatly simplify the procedure

of plasmapheresis and to shorten the time required for the medical

personnel as well as the donor. The basic attribute is in making the

withdrawal of whole blood and reinfusion of packed red blood cells

continuous. While this is happening, the plasma is being collected

in special compartments in a container inside a spinning centrifuge bowl.

- A simplified schematic of the system is shown in Fig. 1. Blood

is drawn from an arm vein of the donor, mixed with anticoagulant, and

pumped by the whole blood pump P1 into the rotating centrifuge 3, of

the type disclosed in U. S. Patent 3,737,096. The centrifuge bowl

contains a disposable plastic bag 5 with a configuration as shown in

Fig. 2.

- The whole blood is delivered to the circumference as shown. As

it flows around the circumference, it separates into packed red cells

and plasma. At a point diametrically opposite to where the whole

blood was delivered, the packed red cells are removed via the RBC

pump P2. By controlling the relative flow rates of the whole blood

and RBC pumps, plasma can be made to accumulate in the bag 5. The

only place it can accumulate is in the two pouches marked "PLASMA

COLLECT VOLUME".

- Meanwhile, the packed red cells are being returned to the donor

via pump P2. When two units (about 500 ml) of plasma have been

collected, the whole blood pump P1 is stopped and the RBC pump P2

continued until plasma begins to be drawn into the RBC line. This is

to allow a maximum amount of RBC to be returned to the donor. At

this point, the RBC pump P2 is shut down and the centrifuge stopped.

The cover is lifted and the tubing closures are sealed off with a

clamp. The two plasma pouches can be removed by tearing the bag

along the line 9 which is a tear seal. In addition, the bag 5 is

cut just beyond the clamps on the closures. The plasma pouches are

lifted from the centrifuge bowl. They each contain about one unit of

plasma.

- An alteration to the above procedure would allow the collection

of platelet concentrate from a donor. After the two units of plasma

have been collected, the pumps P1, P2 are stopped and the centrifuge

bowl 3 allowed to spin for several minutes. During this time,

platelets in the platelet-rich plasma will settle to the outside

wall. Then the RBC pump P2 can be turned on to remove most of the

plasma. When this is removed, the whole blood pump P1 is again started and two more units of plasma collected. In this way, many units of single-donor platelet concentrate can be collected.

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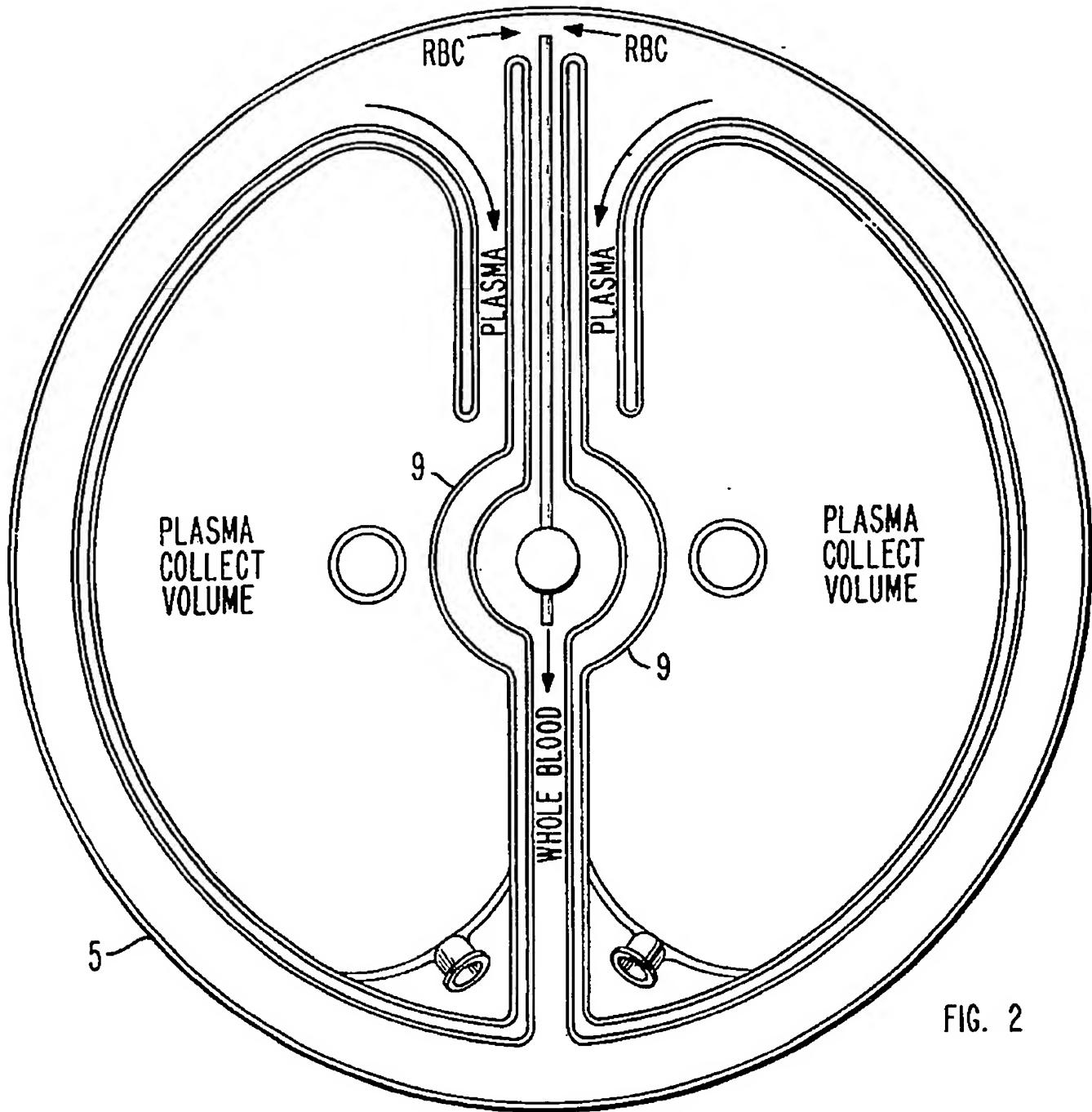


FIG. 2

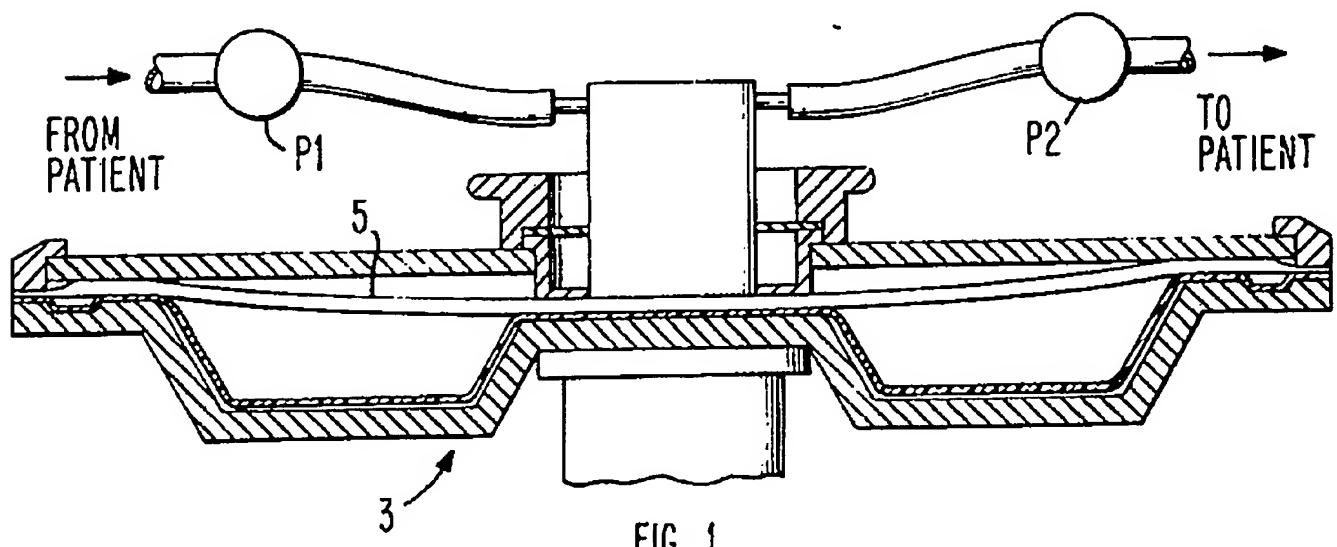


FIG. 1